

4/25/17 "Too many of us are not living our dreams because we are living our fears."-Les Brown

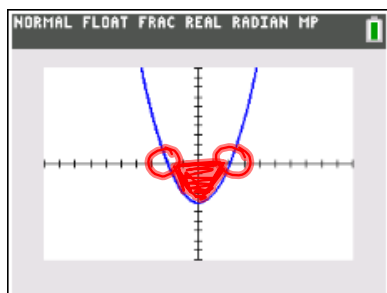
HW: Test 1 on Tuesday 5/2

AIM: How do we find area between two functions?

Warm Up:

1. Find the area between

$$y = x^2 - 4 \quad \text{and the } x\text{-axis.}$$



To find the interval:

$$0 = x^2 - 4$$

$$0 = (x+2)(x-2)$$

$$x = -2, 2 \quad \text{Interval } [-2, 2]$$

$$\text{Area} = \int_{-2}^2 x^2 - 4 \, dx$$

$$\text{Area} = -\frac{32}{3}$$

Negative
Area?

$$\textcircled{*} \text{Area} = \int (\text{Top Function} - \text{Bottom Function}) \, dx$$

$$\text{Area} = \int_{-2}^2 (0 - (x^2 - 4)) \, dx$$

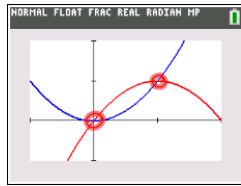
$$\int_{-2}^2 (0 - (x^2 - 4)) \, dx$$

$$\int_{-2}^2 (0 - (x^2 - 4)) \, dx$$

$$\text{Area} = \frac{32}{3} \text{ units}^2$$

2. What is the area bound by

$$y = x^2 \text{ and } y = 2x - x^2$$



Find the interval:

2nd Trace 5

$$x=0 \quad x=1$$

For
points
of
intersection

$$\text{Area between Curves} = \int_a^b (\text{Top function} - \text{bottom function}) dx$$

a and b are x -values of points of intersection.

$$\begin{aligned} \text{Area} &= \int_0^1 ((2x - x^2) - (x^2)) dx \\ &= \frac{1}{3} \text{ units}^2 \end{aligned}$$